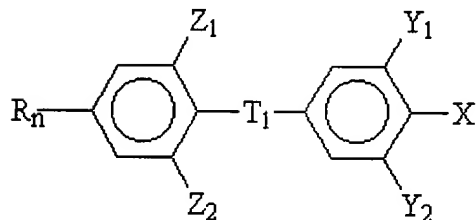
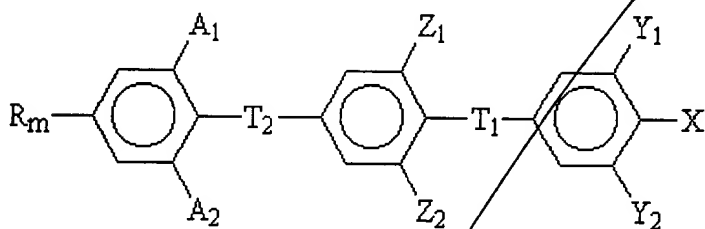


ABSTRACT

SUB A1
A new class of liquid crystal compounds is based on tolane and bis-tolane structures:



(Structure IV)



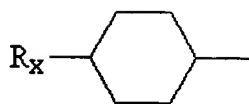
(Structure V)

in which X is a polar group such as F (fluoro), CN (cyano), OCF_3 (trifluoromethoxy), or NCS (isothiocyanate) at least one of the pairs of sites Y_1 and Y_2 , Z_1 and Z_2 , and for the bis-tolane derivatives, A_1 and A_2 are fluoro groups.

T_1 for the tolane derivatives is always a triple bond. For the bis-tolane derivatives, T_1 and T_2 are either both triple bonds or one of the two groups is a double bond with and the other remains a triple bond.

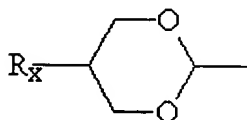
R_n or R_m may be an alkyl group having the general formula C_nH_{2n+1} , an alkenyl group having the general formula C_nH_{2n-1} , an alkoxy group having the general formula

OC_nH_{2n+1} , or an alkenoxy group having the general formula $-OC_nH_{2n-1}$. Additionally, for the tolane compounds, R_n may be a cyclohexyl substituent:



(Structure VI)

or a dioxane substituent:



5 (Structure VII)

in which R_X is an alkyl group having the general formula C_xH_{2x+1} , an alkenyl group having the general formula C_xH_{2x-1} , an alkoxy group having the general formula OC_xH_{2x+1} , or an alkenoxy group having the general formula OC_xH_{2x-1} .

These compounds exhibit useful nematic ranges and melting points. Also disclosed are eutectic mixtures including these compounds.

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